**Trends in life satisfaction in European and North-American adolescents from 2002 to 2010 in over 30 countries**

# Trends in life satisfaction in European and North-American adolescents from 2002 to 2010 in over 30 countries.

*Franco Cavallo[1], Paola Dalmasso[1], Veronika Ottová-Jordan[2], Fiona Brooks[3], Joanna Mazur[4], Raili Välimaa[5], Inese Gobina[6], Margarida Gaspar de Matos[7], Ulrike Raven-Sieberer[2]and the Positive Health Focus Group*

1 Department of Public Health and Pediatrics, University of Torino, Italy

2 Department of Child and Adolescent Psychiatry, Psychotherapy, and Psychosomatics, Research Unit Child Public Health, University Medical Center Hamburg-Eppendorf, Germany

3 Head of Adolescent and Child Health Research, CRIPACC, University of Hertfordshire, UK

4 Institute of Mother and Child, Warsaw, Poland

5 Department of Health Sciences, University of Jyväskylä, Finland

6 Department of Public Health and Epidemiology, Riga Stradiņš University, Riga, Latvia

7 University of Lisbon, Portugal & CMDT/ Institute of Hygiene and Tropical Medicine

**Corresponding author:**

Prof. Franco Cavallo, MD, Department of Public Health and Pediatrics, University of Torino, Via Santena, 5-bis, 10126 Torino (Italy), Tel.: +390116705811, Fax: +390112365811, e-mail: franco.cavallo@unito.it

**Abstract**

**Background**: Life Satisfaction (LS) is an indicator which is widely used for assessing the perception of a child's feeling about his life.

**Methods**: LS is assessed in HBSC via the Cantril ladder with 10 steps indicating the worst and best possible life. This range of values (0-10) was dichotomized into 'low' (0-5) vs. 'high' (6-10). Countries, age groups and genders were compared based on the Odds Ratio (OR) of declaring a higher LS in 2010 with respect to 2002.

**Results**: Analysing the difference between 2002 and 2010, 6 countries from Western Europe show decreasing LS: Austria, Canada, Switzerland, Denmark, Finland and Greenland. In contrast, a group of Eastern European Countries, i.e. Estonia, Croatia, Lithuania, Latvia, Russia and Ukraine, show a significant increase in LS. Data on gender and age differences confirm the lower rating of LS in girls and a decreasing rating with age.

**Conclusion**: The LS scale appears to be a tool capable of discriminating the level of wellbeing of adolescent population among countries.

**Key words:** life satisfaction, adolescents, HBSC, trend.

**Introduction**

Life satisfaction (LS), as an evaluation of an individual's quality of life is an important aspect of well-being[1]and one that is closely linked to subjective health.[2]Well-being in childhood is associated with social competence and good coping skills that lead to more positive outcomes in adulthood.[3]

LS in young people is strongly influenced by a dynamic interaction between their environment, which includes physical environment, housing quality, socio-economic condition, and the quality of their social and familial relationships. Key protective factors for a good LS include a sense of parent/family connectedness, with social support being supplied by at least one caring adult, good family communication[4] and supportive peers, who can help to adjust to new situations and face stressful life events.[5]

Determinants of adolescent LS were not studied until early 1990s.[6]LS is a global assessment of one's life and is thought to be relatively stable over time, compared with spontaneous feelings related to one's immediate experiences.[7] Among adults it is inversely associated with depression, anxiety, suicide, work disability, fatal accidents and all-cause mortality.[8, 9, 10, 11] Studies of LS have found that during adolescence, LS is strongly influenced by life experiences and relationships, particularly within the context of the family.[12, 13]

The aim of our study was therefore to examine trends of LS from 2002 to 2010 in the countries covered by HBSC, to generate hypothesis concerning positive and negative trends observed and identifying possible 'clusters' of countries following the same pathway.

In this study, the underlying assumption is that change in adolescent LS across the last decade might be, at least partially, influenced by macro socio-economic conditions during this period.

**Methods**

Data from the Health Behaviour in School-aged Children (HBSC) 2002, 2006 and 2010 surveys have been used for trends analysis with the aim to explore differences and commonalities among different groups of countries.

The HBSC study has been collecting cross-sectional data on nationally representative samples of 11-, 13-, and 15-year olds since 2001/02 in more than 30 countries in Europe and North America.

Details on the general methodology of the HBSC survey have been published elsewhere.[14]

Among the 42 countries in the 2010 survey, only 31 (including Flemish Belgium examined independently, and Scotland, Wales and England as separate countries) participated in all three surveys and were included in the analyses.

The variable relative to adolescents' LS was represented by a ladder[15] with steps going from 0, the lowest, to 10, the highest. Participants were asked to evaluate their LS using this visual analog scale by indicating the step on the ladder that corresponded to their satisfaction with their life. Data were analysed for the three surveys, in conjunction with age and gender of the adolescents. For the analyses, the range of possible values (0-10) was dichotomized into 'low' (0-5) vs. 'high' (6-10).

The comparison among countries and among age and gender groups was based on the computation , separately for each country, of the age and gender standardized prevalence and of the Odds Ratio of reporting a higher LS in 2010 with respect to 2002, and for the two periods separately, 2006 vs. 2002 and 2010 vs. 2006.

Data were modelled using a multivariable logistic regression where LS (dichotomized into 'low' and 'high') was the dependent variable and survey year, gender (males taken as reference) and age (11 year old school-students taken as reference) the independent ones. As the computed ORs are just relative measures of difference between one period and the other, nothing can be said about absolute differences between the two periods, or about absolute differences among countries.

A p-value for each OR was computed, presenting significance at the traditional values of 0.05, 0.01 and 0.001.

All analyses were performed using STATA v12.1 (StataCorp, College Station, TX:StataCorp LP).

**Results**

Observed trends for LS are presented and further discussed in terms of the relative change between one period and the other within countries, and of the observed differences among countries; absolute values were not taken into consideration, as the focus of the paper is on comparing trends within countries and among them.

Analysing the overall difference between 2002 and 2010, LS decreased for a group of 6 relatively affluent Western countries (Austria, Canada, Switzerland, Denmark, Finland and Greenland) and two belonging to the former Eastern European Countries (Hungary and Macedonia). In contrast, increasing LS was observed in a group of Eastern European Countries, i.e. Estonia, Croatia, Lithuania, Latvia, Russia and Ukraine, and in four Western European countries (Spain, Norway, Portugal and Belgium).

Analysing the two periods separately (2002-2006 and 2006-2010) revealed that for Greenland and Hungary the decreasing trend was mainly determined by the first period, while for the other decreasing countries the significant reduction occurred between 2006 and 2010.There was only a steady decrease in reported LS across all three time points in Macedonia (ORs: 0.798 and 0.867 respectively) and Switzerland (ORs: 0.924 and 0.916 respectively).

As for the 'high satisfaction countries' belonging to the Western European cluster, the exception occurred among Spanish adolescents, with a drop in ORs from 1.446 in the first period to 0.837 in the second.

In the Czech Republic, which has been classified as seeing no change overall, the opposite has occurred, with a decrease between 2002 and 2006 (OR=0.864), followed by an increase between 2006 and 2010 (OR=1.298).

In terms of gender differences, females have, with a few exceptions (Latvia, Macedonia and Ukraine), a general and significant tendency to a lower level of LS in all countries.

LS also decreases with increasing age, even if this pattern has many exceptions in the surveyed countries. The sharp decrease occurs in most countries at 15 years, with the only exception of Canada and Czech Republic, where the rating of LS remains unchanged across age. At 13 years the decrease in rating is less marked, and 6 countries (Canada, Czech Republic, Hungary, Italy, Latvia, and Ukraine) do not show significant differences with respect to their fellow mates of 11 years.

**Discussion**

The strength of this study lies on the quantity and quality of data, collected in comparable ways and with similar protocols in all involved countries, allowing, for the first time, to have a cross-national view of a decennial trend in LS of youth in Europe and North America.

The main limitation results from the fact that the comparison between countries is based on relative changes, not on absolute levels. A country with a sharp decline from a high value may still end up having higher LS than a country which starts with a low value and shows a sharp increase. For the aim of the study, this might not be a crucial drawback, as the focus is pointed on the analysis of changing trends within a country, and on the different trends observed in different sets of countries behaving in a similar way, with a view of the possible relation with on-going macro socio-economic conditions.

Trends in LS across Europe and North America show a quite scattered picture. In fact, increasing, decreasing and stable situations are split in a similar way (12 countries with increasing values of LS, 7 with decreasing values and 12 with stable ones).

It is interesting to note a 'Northern European' cluster of countries characterized by decreasing LS between 2002 and 2010, and an 'East European' cluster with increasing LS. Spain seems to be the only country with a decrease in LS that appears to follow the general economic crisis.

Some similarities with the trend in self-rated health[16] can be pointed out as, for example, the similar trend in Hungary and Greenland (worst rating in the period 2002-2006), the marked trend of the Check Republic towards increasing values in the period 2006-2010 and that of Spain and Denmark in the opposite direction in the same time interval.

Data on gender and age differences confirm what has already been evidenced in the recent literature, namely that girls report a lower LS than boys and that LS decreases with increasing age.[17]In addition, the trend towards decreasing satisfaction with increasing age is consistent across all countries and across age.

The crucial transition towards lower LS seems to take place between 13 and 15yrs, as if the onset of adolescence were the crucial event, rather than the physiological change taking place, especially in girls, usually at an earlier age**.**

As for the geographical cluster, no clear pattern seems to emerge. A more detailed analysis of their characteristics, including socio-economic data and cultural features at the national level, would be necessary to gain a deeper insight into the variability of this phenomenon.

In conclusion, the LS scale appears to be a tool that is not only capable of discriminating the level of wellbeing among countries, but also of catching the qualities of emotional well-being that are different from those captured by measuring self-rated health. Using these two indicators together is therefore likely to be of value for public health practitioners for the overall assessment of the health of the adolescent population.

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**Conflicts of interest**

None declared.

**Keypoints**

- This is the first cross-national study of a decennial trend in Life Satisfaction of youth in Europe and North America.
- A 'Northern European' cluster of countries characterized by decreasing LS between 2002 and 2010, and an 'East European' cluster with increasing LS can be noted.
- Girls report a lower LS than boys and a decreasing LS with increasing age, across all countries and across age.
- The LS index is likely to be of value for public health practitioners for the overall assessment of the health of the adolescent population.

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**Tables**

**Table 1 –Age and Gender Standardized Prevalence[§] and Odds Ratios for Life Satisfaction (dichotomised in 'low' vs. 'high') for each country.**

| | Age and Gender Standardized Rate[§] (per 100 Children) | | | Odds Ratios (Adjusted for survey year, gender and age group) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | *2002* | *2006* | *2010* | *2010 vs 2002* | *2006 vs 2002* | *2010 vs 2006* | *Fermale vs Male* | *13yrs vs 11yrs* | *15yrs vs 11yrs* |
| ***Austria*** | 88.0 | 88.0 | 85.9 | 0.834** | 0.998 | 0.836** | 0.650*** | 0.636*** | 0.564*** |
| ***Belgium (Flemish)*** | 87.7 | 90.3 | 90.1 | 1.265** | 1.301*** | 0.972 | 0.784*** | 0.745*** | 0.606*** |
| ***Canada*** | 86.3 | 85.6 | 83.7 | 0.807*** | 0.944 | 0.855** | 0.644*** | 0.945 | 0.942 |
| ***Croatia*** | 81.2 | 80.5 | 85.3 | 1.371*** | 0.963 | 1.424*** | 0.751*** | 0.730*** | 0.508*** |
| ***Czech Republic*** | 83.3 | 81.2 | 84.9 | 1.121 | 0.864* | 1.298*** | 0.724*** | 0.883 | 0.883 |
| ***Denmark*** | 87.6 | 90.3 | 85.9 | 0.862* | 1.343*** | 0.641*** | 0.560*** | 0.811** | 0.856* |
| ***England*** | 83.4 | 85.2 | 85.6 | 1.180* | 1.154* | 1.022 | 0.626*** | 0.867* | 0.762*** |
| ***Estonia*** | 76.6 | 85.9 | 87.3 | 2.114*** | 1.877*** | 1.126 | 0.878*** | 0.743*** | 0.542*** |
| ***Finland*** | 91.6 | 91.5 | 89.9 | 0.813** | 0.989 | 0.822** | 0.690*** | 0.757*** | 0.610*** |
| ***France*** | 85.0 | 84.1 | 85.6 | 1.046 | 0.928 | 1.128* | 0.706*** | 0.833*** | 0.669*** |
| ***Germany*** | 82.8 | 82.0 | 84.1 | 1.099 | 0.949 | 1.159** | 0.711*** | 0.698*** | 0.704*** |
| ***Greenland*** | 91.4 | 82.2 | 84.2 | 0.563*** | 0.490*** | 1.149 | 0.596*** | 0.710* | 0.535*** |
| ***Hungary*** | 84.5 | 81.2 | 82.7 | 0.882 | 0.800** | 1.102 | 0.842*** | 0.927 | 0.590*** |
| ***Ireland*** | 86.4 | 87.4 | 86.6 | 1.033 | 1.106 | 0.934 | 0.714*** | 0.750*** | 0.474*** |
| ***Italy*** | 85.3 | 84.5 | 85.7 | 1.042 | 0.943 | 1.105 | 0.754*** | 0.924 | 0.617*** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ***Latvia*** | 76.9 | 79.1 | 84.6 | 1.662*** | 1.145* | 1.452*** | 0.896* | 0.909 | 0.802** |
| ***Lithuania*** | 75.1 | 78.7 | 81.1 | 1.440*** | 1.225*** | 1.176** | 0.794*** | 0.856** | 0.715*** |
| ***Macedonia*** | 90.5 | 88.4 | 86.6 | 0.692*** | 0.798** | 0.867 | 0.965 | 0.631*** | 0.473*** |
| ***Netherlands*** | 94.2 | 93.0 | 94.0 | 0.962 | 0.815* | 1.181*** | 0.491*** | 0.727** | 0.505*** |
| ***Norway*** | 82.8 | 88.0 | 87.9 | 1.524*** | 1.534*** | 0.993 | 0.669*** | 0.814*** | 0.586*** |
| ***Poland*** | 80.0 | 82.0 | 79.8 | 0.993 | 1.162** | 0.855** | 0.744*** | 0.686*** | 0.498*** |
| ***Portugal*** | 80.4 | 82.3 | 84.6 | 1.344*** | 1.123 | 1.196** | 0.756*** | 0.776*** | 0.592*** |
| ***Russia*** | 76.1 | 79.5 | 82.3 | 1.474*** | 1.215*** | 1.213*** | 0.791*** | 0.885* | 0.824*** |
| ***Scotland*** | 85.9 | 84.4 | 87.5 | 1.157* | 0.898 | 1.288*** | 0.601*** | 0.729*** | 0.619*** |
| ***Slovenia*** | 85.6 | 85.7 | 86.8 | 1.090 | 0.998 | 1.092 | 0.677*** | 0.661*** | 0.570*** |
| ***Spain*** | 87.8 | 91.0 | 89.6 | 1.211** | 1.446*** | 0.837* | 0.732*** | 0.594*** | 0.459*** |
| ***Sweden*** | 85.9 | 87.4 | 86.8 | 1.078 | 1.140* | 0.946 | 0.587*** | 0.547*** | 0.394*** |
| ***Switzerland*** | 89.1 | 88.2 | 87.4 | 0.846** | 0.924 | 0.916 | 0.613*** | 0.722*** | 0.699*** |
| ***Ukraine*** | 74.6 | 81.0 | 79.2 | 1.301*** | 1.453*** | 0.895 | 0.910 | 0.962 | 0.661*** |
| ***USA*** | 83.0 | 84.1 | 84.2 | 1.077 | 1.075 | 1.002 | 0.760*** | 0.850* | 0.793*** |
| ***Wales*** | 83.7 | 81.1 | 82.5 | 0.919 | 0.827** | 1.110 | 0.556*** | 0.716*** | 0.645*** |

§ The reference population was the HBSC 2010 total population

** p<0.05 **p<0.01 ***p<0.001*